

DEVICE AND METHOD FOR COMMINUTING MATERIALS

Cross Reference To Related Applications

[1] This application is a Continuation-In-Part of the commonly owned U.S. Patent
5 Application 10/042,052, filed 18 October 2001, titled "APPARATUS AND METHODS
FOR COMMINUTING MATERIALS", ^{NOW ABANDONED} ~~presently pending~~, which is hereby incorporated
by reference in its entirety. This application also claims priority from commonly
owned U.S. Provisional Patent Application 60/480,907, filed 23 June 2003, titled
"DEVICE FOR COMMINUTING MATERIALS", presently pending, which is hereby
10 incorporated by reference in its entirety.

Background

[2] Many different types of material are comminuted, *i.e.*, the size of the material's
particulates are reduced, for a variety of different reasons. For example, coal
15 excavated from a mine is frequently comminuted to make the particulate size smaller
and more uniform to facilitate the coal's transportation and/or to provide consistent
combustion in a furnace. Food stuffs, such as wheat, are frequently comminuted to
produce flour. And rock containing a desirable ore is frequently comminuted to
provide easier access to the ore and the metal included in the ore.

20 [3] A common way of comminuting material is to collide a particle of the material
with an impact surface. The collision generates a force on and inside the particle that
causes the particle to fracture into two or more smaller pieces. The amount of force
generated in the collision is directly proportional to the impact speed of the particle—
the speed of the particle relative to the impact surface at the moment of collision—
25 and increases as the impact speed increases. As the amount of force generated on